

Conceptualising Service Quality and Technology Factor as drivers for Continuous Usage of Broadband among Rural Dwellers in Malaysia

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Abstract—Information and communication technology (ICT) have found to be a key player in making IT and IT-enabled services of some countries a tradable and leading to the fastest average annual growth in their economy. Broadband which is the arm of ICT is believed to be a vital links of enhancing competitiveness in an economy and sustaining economic growth. Despite the significances of broadband, broadband connectivity is not yet seen to have enormous potential to increase national competition in Malaysia, especially in the rural areas. This shows that there is need to take a drastic step to maintain continuous use of broadband among rural dwellers in Malaysia. This paper presents a model that will aid continuous use of broadband among rural consumers in Malaysia.

Keywords: Information and Communication Technology, Broadband, Rural Areas, Rural Dwellers

I. INTRODUCTION

The last segment of 20th century experiences evolvement of information age, which is a period that information is viewed to influence social, cultural and economic behaviour as machinery did in an earlier century during industrial age [1]. The acquisition of knowledge and skills through efficient access and use of information and communication technology is the key way to literacy [2].

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The use of the internet such as emails, blogs and forums, and Short Message Service (SMS) has become important in all organizations as a means to communicate knowledge and information [3]. This leads to the proposition of some researchers that Information and communication technology (ICT) is generally believed as the skills that allow individual to use computers, software applications, databases and other technologies in order to obtain a wide variety of academics, work-related, and personal goals [4], leading to a computerized telecommunication in producing daily work procedures and communicating.

ICTs have found to be a key player in making IT and IT-enabled services of some countries a tradable and leading to the fastest average annual growth in their economy [5]. Many of the developing and developed countries; India, Ireland, Hungary, the Russian Federation, Switzerland, Poland, Denmark, China, Singapore, Finland, Sweden and Spain, have achieved annual growth of 15% or more from the exportation of IT and IT-enable services as at the year 2006 as shown in Figure 1, which in turn added to their economic growth [6].

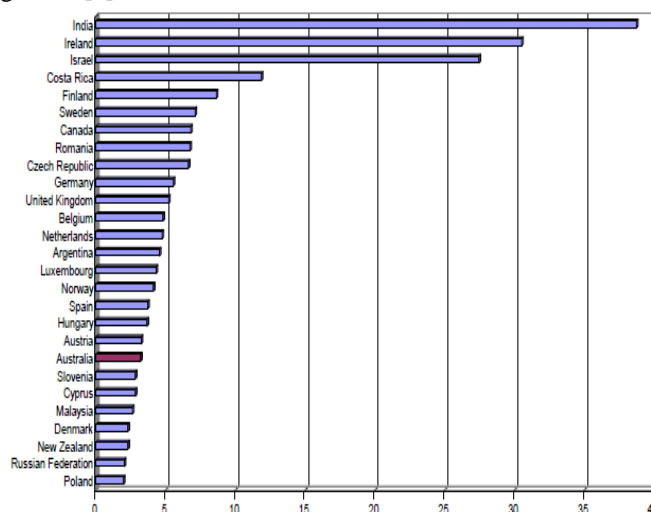


Fig.1: IT-Enabled Services Export, 2006 (%) (Source: Houghton and Welsh, 2009)

Broadband provides high speed broadcast with greater bandwidth and faster rate in data transmission. This is why it is considered as the technology which provides consumers fast and always-on access to new applications, services and content with real lifestyle and productivity benefits [7]. With the rapid growth of internet access technologies, consumers tend to have higher demand and expectation on internet technologies and services [8]. Researchers have started to look into various applications that can be applied through the implementation of broadband which have potentially permitted high revenues in communications industries, such as the study of mobile TV acceptance [9] in which they indicated that there are over a million subscribers only in the year 2009 in South Korea.

The report has shown that Communications and Multimedia Industry in Malaysia contributed 6.1% of revenue to country's GDP in the year 2008 [10]. Thus, the trend at which the internet users are growing in the last few years envisages that Malaysia is moving towards a new era of advanced information, communications and multimedia services. But the broadband's user's rate in Malaysia is still below expectation level as compared to many countries [11]. Broadband usage rate in Malaysia is believed to be lagging in recent years as compared with its population growth especially in the rural areas [12]. This paper intends to model driving factors for continuous usage of broadband among rural dwellers in Malaysia.

II. ICT DEVELOPMENT IN MALAYSIA

Malaysia is the most articulate country among the developing countries in the world that boosts the ICT usage to its inhabitants through the support of their government policies and programs which target its mass population [13]. The study of Asian-Pacific Economic Cooperation shows that Malaysia's preparedness level towards ICT usage is relatively high when comparing to other Association of South East Asian Nation (ASEAN) countries [14].

Those support have been pay off by the year 2007 while the penetration rate for the population with internet dial-up connections has jumped to 14.3% compare to 7.1% in 2000 [15]. Also, the broadband connection penetration rate jumped from 0.08% in the year 2002 which was the period that the service was introduced in Malaysia, to 5.0% in 2007 [15]. The increment in the penetration rate of broadband among Malaysian is an opportunistic issue since many of ICT applications could be accessed through the use of strong broadband connection [13].

The obligation of Malaysia to ICT started in the middle of 1990s while a total of RM 2.6 billion was assigned for acquiring ICT systems and applications for the government during the Seventh Malaysia Plan. The acceleration of ICT's application continues in the Eight Malaysian plan with allocation of RM 5.2 billion for ICT development which was the 5% of the annual budget. According to [16], there were increment in the allocated fund for ICT related programs and projects with RM 12.9 billion in the Ninth Malaysian Plan.

III. RURAL ICT AND RURAL BROADBAND

Information technology (IT) has been used both in developed and in developing countries to support operational, tactical, and strategic processes within organizations. IT is a general-purpose technology that has wide application in various manufacturing and service sectors. It has strong spread effects and extensive linkages with the rest of the economy. There is a widespread belief that information is vital for rural development by using information as a key issue in the information age. The real challenge of the present day is not producing information or storing information, but getting people to use information.

The development in the rural areas can be improved by the use of ICT and brings about information and knowledge society [17]. The ICT is best fit for bringing about competitive and successful rural community in the effort to better the life of rural dwellers and compete with people in urban areas [18]. ICT has been accepted nowadays to be used for bridging the gaps between urban and rural communities, rich and poor people especially in the area of information seeking [18]. [19] Stressed that ICT is useful for the rural communities in dealing with government electronically (e-government) and public sectors with the required infrastructures as shown in Figure 2.

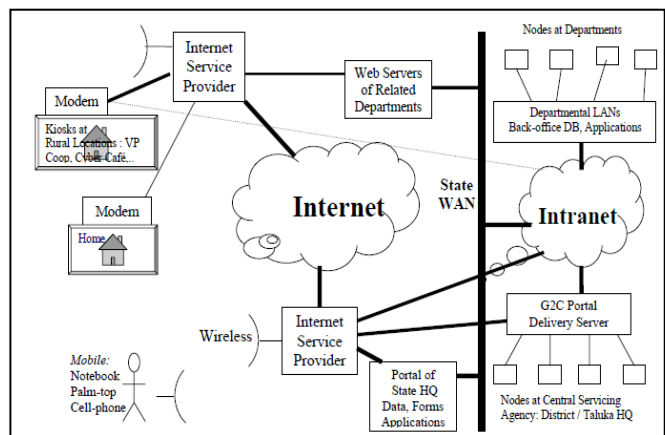


Fig. 2: Rural ICT Infrastructure

The rural ICT solutions are normally offered through internet portals hosted on a delivery web server to provide access to the rural dwellers through inexpensive internet medium. The information flow between the delivery server and the other departments is accomplished through Intranet/LAN connectivity with servers of those departments which are optional. Due to non-computerization of back-end systems, the transactions are manually exchanged and response data is keyed in manually through the nodes on the delivery server. It may be noticed that the end-to-end connectivity between the central service providers (district administrations, cooperative unions, post office) and the rural dwellers is accomplished through a number of stages that involves several agencies.

Generally speaking, broadband telecommunication services are growing towards usage of higher rate of data due to the increase demand for the interactive games, downloading of videos clips and music [20]. Most of these applications require minimum of access speed of 50Mbit/s, which is usually common in urban areas [21] while the broadband services in rural areas are struggling with lower speed because of predicament of high cost of provision [22]. The internet users in the remote and rural areas are less in embracing broadband access due to the technology and economic factors leading them in continuous using low-speed dial up access in lieu of demanding for higher services [23].

IV. DRIVERS FOR CONTINUOUS USAGE OF BROADBAND IN RURAL AREA

Based on the submission of some authorities and researchers in the field of broadband connectivity and rural ICT, the drivers for continuous or perpetual usage of broadband among the rural dwellers are modelled and presented in Figure 3.

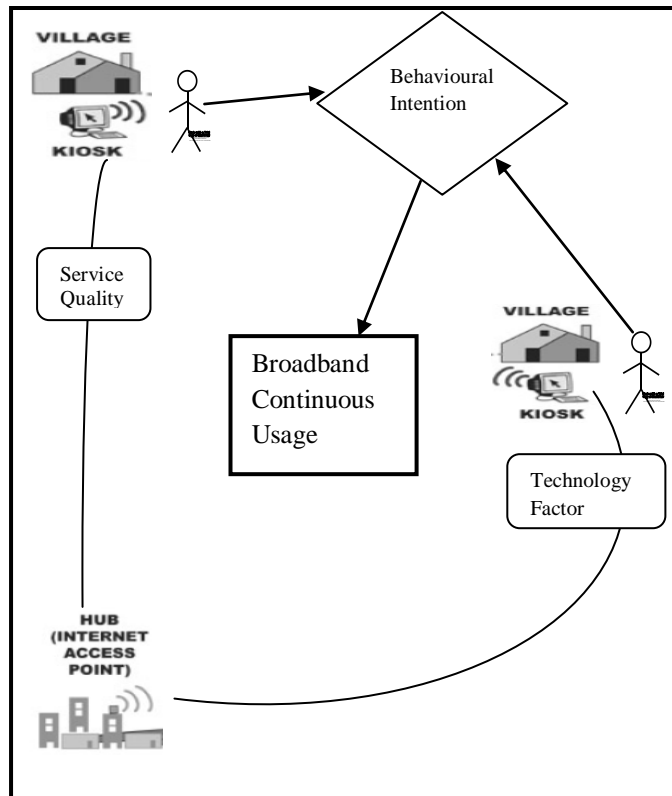


Fig. 3: Drivers for Continuous Usage of Broadband in Rural Areas

Several companies and governments are prioritizing their core strategies around broadband [24]. Access to advanced communications services is considered crucial for economic and social development and a higher quality life [25]. Constant changes and innovations have increased the

importance of broadband [26], while some estimates have even gone so high as to predict that one-third of all economic growth up to 2011 should be connected with broadband diffusion [27]. Broadband adoption is clearly one of the most studied phenomena in the last few years and several different conceptual frameworks intended for a more structured approach have been proposed [28], [29]. Both the differences between countries [29], [30] and the socio-demographic characteristics of a population that is slow to adopt broadband [31], [32] have been widely studied.

The continuation of usage of technology by consumers creates survival for the service technology and revenue for the firms [33]. It was argued that continuous usage of technology may be triggered by the acceptance and consumer satisfaction towards service delivery which is the antecedent of behavioural intention [34].

Moreover, the theory of reasoned action identifies a link with emergence of behavioural intention and behavioural expectation as intermediaries between attitude and behaviour of users [35], [36], [37]. Also, satisfaction of buyers is seen as determinant of continuation of using a technology [38], [39]. Thus, [40] argue that buyer's level of satisfaction is believed to affect their purchasing behaviour.

[41] Defines technology as material artefact (software and hardware) that is used to perform duties and plays an enabling role in increasing knowledge among employees. [42] Submitted that technology has always been the main variable in organizational theory, and that the fundamental requirement of knowledge sharing has always been technology [43]. [43] identify issues as technological factors that affect knowledge sharing and usage of technology in the community. ICT infrastructure which is the availability of computer that will facilitate and support creation, penetration and usage of broadband [44]; ICT tools which is the simplicity of the devices for acquiring knowledge [45] and ICT know-how (provision of frequent ICT training to the users of technology).

Service quality was developed to measure the perceptions of consumers in the marketing research, while a few researches have used it in measuring acceptance and adoption of technology [46], [47]. Therefore, a service quality was incorporated into the IS success model of DeLone and McLean [48]. This is why it is submitted that service quality is helpful to a personnel wishing to develop their system and evaluate the roles of IS department in order to facilitate end users [49]. Researchers came up with data collection protocol to determine the relationship between technology use, emotional expression and service quality perception [50]. Recently, [51] modelled and validated an instrument to measure a user's perceived service quality of information presented on web portals. Also, there are some researches on a multiple-item scale for assessing electronic service quality [52]. A generated argument submitted that service quality plays a paramount role in determining consumer readiness to remain with their internet service provider (ISP) and measures behavioural intention of the customers on the technology usage [53].

When subscribing to broadband, consumers have to sign an annual contract for accessing the service. If the provided service is considered to be unsatisfactory during this period, consumers are able to discontinue their broadband subscription. Alternatively, if consumers have a choice of other internet services, they may move from their existing service to another which is a common practice in the rural areas. Therefore, service quality may play an important role determining consumers' willingness to remain with their existing broadband service in their locations.

V. CONCLUSION

Broadband provides high speed broadcast with greater bandwidth and faster rate in data transmission. This is why it is considered as the technology which provides consumers fast and always-on access to new applications, services and content with real lifestyle and productivity benefits. The prime factor to be taking into consideration in exhibiting continuous usage of broadband among the rural dwellers in Malaysia is the behavioural intention of consumers, as shown in Figure 3.

Malaysia government has made provision for the broadband internet services in the rural areas of Malaysia. Many of the post offices in the rural areas are attached with rural internet centres (Pusat Infodesa). The objectives of rural internet centres are to serve as a place where rural dwellers are met for receiving ICT training and produce entrepreneurs among the rural dwellers. The rural dwellers will stick to the usage of broadband if the technology factors are put in place in their villages and the service quality they are receiving from their broadband internet are met with their tasks. These two factors will determine the willingness of broadband's users in the rural areas to continue or discontinue using the broadband internet services.

VI. FUTURE WORK

The derived model in this work is intended to be validated empirically for future work through the data collection from the respondents at the ICT centres where rural dwellers in Malaysia are met for ICT training and accessing online information.

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